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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/508,512	03/24/2000	ROBERT ARTHUR HENRY EDWARDS	REF/EDWARDS/	3037
7590	05/04/2004		EXAMINER	
BACON & THOMAS 625 SLATERS LANE 4TH FLOOR ALEXANDRIA, VA 22314			CROSS, LATOYA I	
			ART UNIT	PAPER NUMBER
			1743	

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/508,512	EDWARDS ET AL.
	Examiner	Art Unit
	LaToya I. Cross	1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 05 May 2003.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-41 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-5,7-19,22-33,38,40 and 41 is/are rejected.  
 7) Claim(s) 6,20,21,34-37 and 39 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

## **DETAILED ACTION**

This Office Action is in response to Applicants' amendments dated May 5, 2003. In this Office Action, the original claims submitted on March 24, 2000, along with the preliminary amendment dated March 24, 2000 and the amendments to the original claims submitted on August 23, 2003 and May 5, 2003 have been recorded and are considered in this Office Action. The amendment dated October 29, 2003 has NOT been considered in this Office Action.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-5, 8, 23, 29, 30 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,132,539 to Kwasnick et al.

Kwasnick et al '539 teach a radiation imager comprising a scintillator mated with a photodetector array. The scintillator may be cesium iodide or alternatively any other known scintillating material (col. 3, lines 44-46). A desiccant (hygroscopic agent), such as silica gel, is formed around the scintillation material to provide moisture protection for the scintillator (col. 5, lines 23-27). A photodetector array is optically coupled adjacent to the scintillator and further connected to a processing circuit, which processes electrical signals for use in display and analysis equipment (col. 2, line 68 – col. 3, line 3). The photodetector array is a plurality of photodiodes (col. 3, lines 4-15). It is noted that Applicant's claims recite "suitable for selective response to tritiated water vapor and other hydrophilic tritiated species in a gas", however,

this is mere intended use. In claims directed to an apparatus, the intended use is given no patentable weight. See MPEP 2111.02.

3. Claims 1, 3, 5, 8, 9-11, 17, 23, 28, 29, 30, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,562,158 to Schellenberg.

Schellenberg '158 teaches that scintillation elements can be used in counting isotopes such as tritium. The scintillation element comprises a scintillation material added to a carrier via spraying, brushing or rolling on to forming a coating of carrier onto the scintillation material, as recited in claims 8 and 29. The carrier may be in the form of a thin layer of silica-gel as recited in claims 3 and 5 (col. 3, lines 46-51). Silica gel is a known hygroscopic agent. With respect to claim 9, Schellenberg '158 further teaches that including a small amount of detergent, such as Triton X sulfonate improves the ability of the scintillator to receive water or aqueous solutions. The scintillation elements of Schellenberg '158 are taught as being used in determining the concentration of tritium. The reference teaches that the radioactive energy (tritium) is converted into light pulses. The radioactivity is absorbed by the scintillator and is emitted as a pulse of visible or near-infrared light. The light is picked up by a photomultiplier tube, as recited in claim 11, 17, 23, 28, 30 and 31. See col. 1, lines 11-20.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 2, 12-16, 18, 19, 22, 24-27, 33, 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schellenberg in view of Great Britain Publication 1,092,797 to Atomic Energy and US Patent 5,166,073 to Lefkowitz et al.

The disclosure of Schellenberg is described above. Schellenberg fails to teach the scintillator material of claim 2 and the container in which the scintillator material is disposed.

Atomic Energy teaches detection of tritium in air and vapors. The reference teaches use of a plastic phosphor scintillation material for good light collection efficiency. See page 3, lines 1-5 and 52-60. With respect to the inlet/outlet ports Atomic Energy '797 teaches a preferred embodiment comprising a detector cell having inlet and outlet parts, as well as optically clear windows (page 2, lines 68-96). Specifically, Atomic Energy teaches that the scintillator (20) is disposed within gas and liquid tight container (10). The container has an inlet port (13) and an outlet port (14), as recited in claims 24 and 26. Figure 4 of the reference shows pump (51) used to move air (tritium containing sample) to the detector cell and in contact with the scintillator, as recited in claims 25 and 27. This allows efficient detection of tritium by allowing pure gases to flow inward and outward. For measuring, Atomic Energy '797 teaches using photomultiplier tubes that are fed through amplifiers, which in turn feed rate meter circuits and recording meters. With respect to claims 16 and 33, Atomic Energy teaches that the air pump

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draws air into the inlet and pass the scintillator. Scintillation light is piped to the windows which are juxtaposed to the photomultiplier tubes. The tubes are energized and the outputs are fed through amplifiers to a circuit and an indicating or recording meter (page 4, lines 94-115).

With respect to claims 2 and 40, Atomic Energy teaches plastic phosphors as scintillator materials for measuring tritium. Zinc sulfide is also a known scintillation material for measuring tritium, as taught by Lefkowitz et al (col. 3, lines 24-25 and col. 5, lines 19-28).

It would have been obvious to one of ordinary skill in the art to use plastic phosphor or zinc sulfide as a scintillation material due to its good light collecting properties. Also, it would have been obvious to one of ordinary skill in the art to use the teachings of Atomic Energy '797 to incorporate the scintillator of Schellenberg into a container having inlet and outlet parts and optical window, as well as measuring means to provide a more efficient scintillating element for determining tritium.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schellenberg in view of US Patent 3,945,797 to Mlinko et al.

The disclosure of Schellenberg is described above. Schellenberg differs from the instantly claimed invention in that there is no disclosure of an additional zeolite in the scintillator.

Mlinko et al teaches a method for measuring tritium isotopes. The method involves contacting tritiated water with a contact catalyst on an aluminum oxide substrate. The contact catalyst is responsible for absorbing the tritiated water. Mlinko et al teaches that zeolites are suitable for due to their ability to readily absorb water allow the tritium to firmly bond to it (col. 4, line 62 – col. 5, line 20).

It would have been obvious to one of ordinary skill in the art to incorporate a zeolite into the scintillator of Schellenberg to help absorb tritiated water and aid in the contact of tritium in the sample with the scintillator.

***Allowable Subject Matter***

8. Claims 6, 20, 21, 34-37 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to teach or suggest zinc chloride, potassium acetate, phosphoric acid or lithium chloride as a layer formed on a solid scintillator material, as recited in claim 6. With respect to claims 20, 21, 34 and 35, the prior art of record fails to teach or suggest a non-discriminating monitor in addition to the first scintillator. Further, with respect to claims 36, 37 and 39, the prior art of record fails to teach a second sealed radiation monitor to account for background radiation field or the incorporation of the scintillator into a breathing mask.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaToya I. Cross whose telephone number is 571-272-1256. The examiner can normally be reached on Monday-Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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